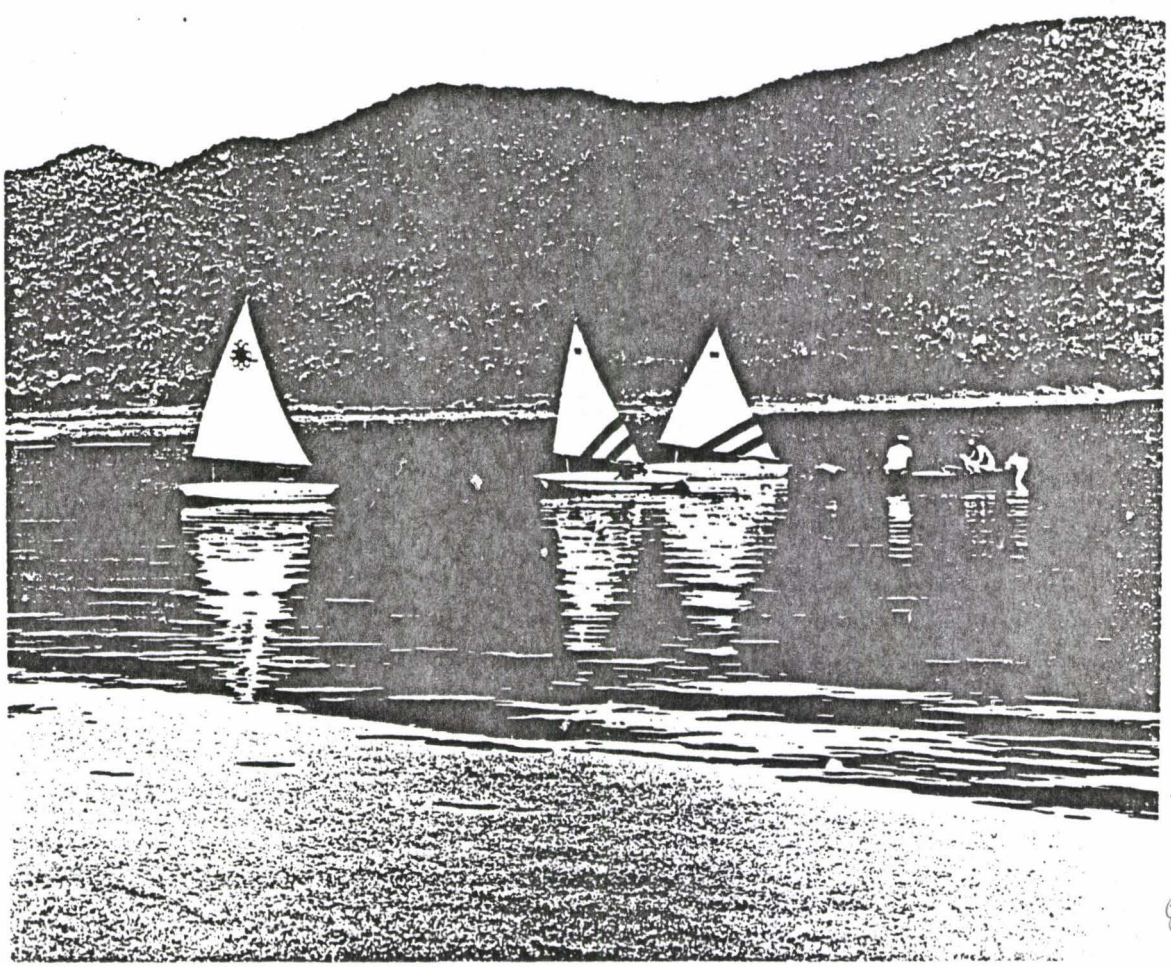
BOLAR MOUNTAIN RECREATION AREA
GATHRIGHT DAM
AND
LAKE MOOMAW

ANALYSIS OF CAMPGROUND DEVELOPMENT SCALE
The Conversion of Picnic Area I



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The Conversion Of Picnic Area I

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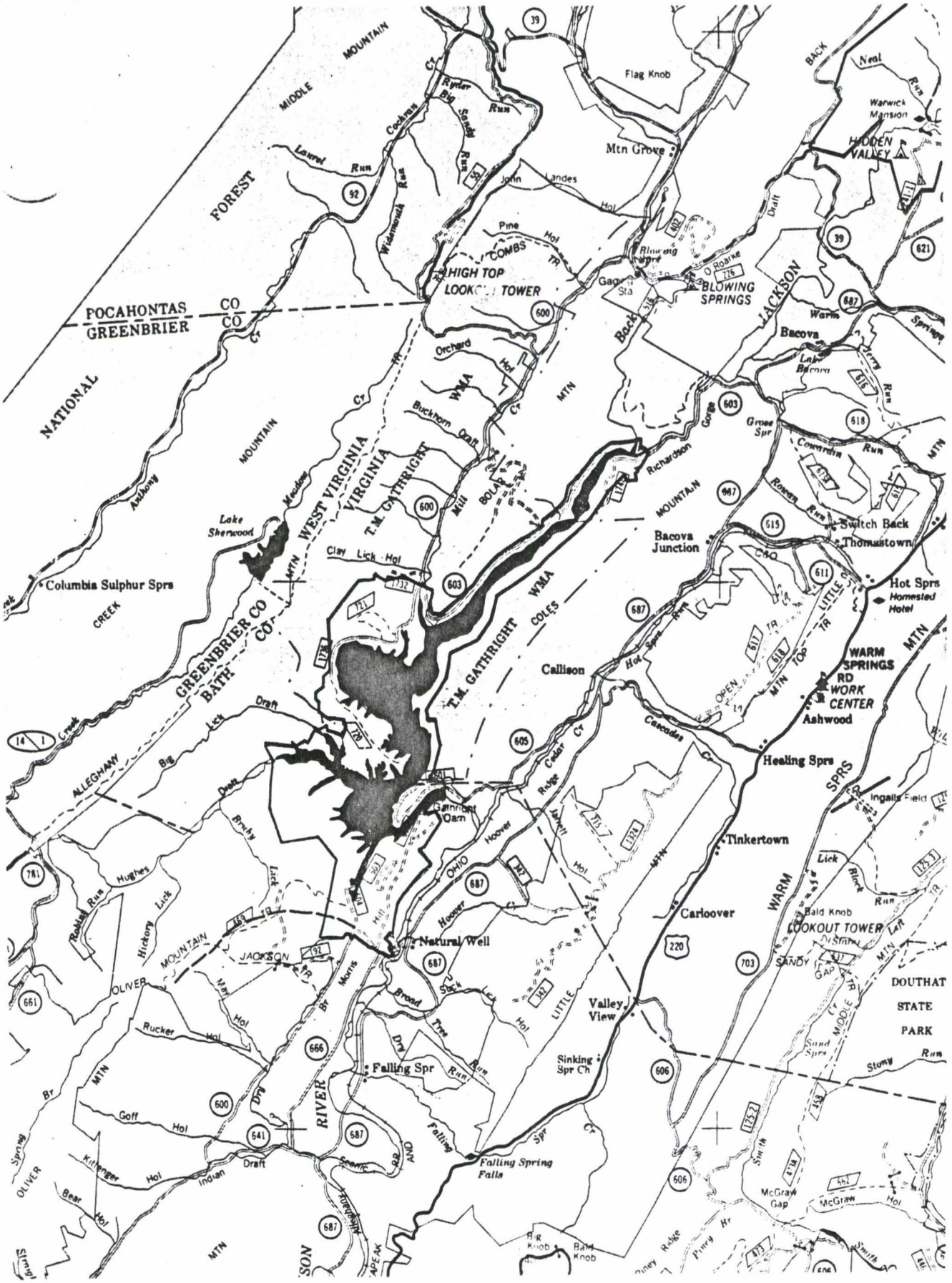
This study was prepared as a student project in partial fulfillment of the requirements of the Professional Development for Outdoor Recreation Management Program at Clemson University. It in no way reflects U.S. Forest Service policy nor are the opinions expressed of anyone other than the author.


POCAHONTAS CO
GREENBRIER CO
NATIONAL FOREST
MIDDLE MOUNTAIN
Flag Knob
Mtn Grove
HIGH TOP LOOKOUT TOWER
COMBS TR
BLOWING SPRINGS
HIDDEN VALLEY
Warwick Mansion
JACKSON
Bacova
Bacova Junction
Switch Back
Thomastown
Hot Sprs
Homestead Hotel
WARM SPRINGS RD WORK CENTER
Ashwood
Healing Sprs
Tinkertown
Carloover
LOOKOUT TOWER
DOUTHAT STATE PARK
Valley View
Sinking Spr Ch
Falling Spr
Falling Spring Falls
Natural Well
Gatewright Dam
Callison
Columbia Sulphur Sprs
Lake Sherwood
T.M. GATHRIGHT WMA
WEST VIRGINIA
VIRGINIA
GREENBRIER CO
BATH CO
ALLEGHANY
OLIVER
JACKSON
WARM SPRINGS MTN
McGraw Gap
Ingalls Field
Blue Ridge Pkwy

CHAPTER I

INTRODUCTION

Gathright Dam and Lake Moomaw is a recreation complex located in the Alleghany Highlands of western Virginia. It has been open for public boating use since April of 1981. Camping and picnic facilities were not open until the spring of 1982. It is the only supply of flat water recreation within a sixty mile radius. The recreation complex is within an hour drive of 650,000 people. There are 59 million people within a day's drive (1980 census). The transportation net serving the complex includes Interstates 64 and 81, U.S. Routes 220 and 60 and State Routes 39 and 42. Interstate 64, U.S. 60 and section of U.S. 220 are within ten miles of the south end of the lake from Covington, Virginia. Access to the north end of the lake is over State Route 39 from U.S. 220.

The complex is about 215 miles southwest of Washington, D. C. (a five hour drive) and approximately the same distance south of Pittsburgh, Pennsylvania. Richmond, Virginia is approximately 180 miles east of the lake (a four hour drive). Charleston, West Virginia is approximately 150 miles west of the lake (a four hour drive).

The area surrounding the 2,530 acre lake is rural. It lies in a rugged, picturesque and isolated area which gives it a wilderness character. It has approximately 43.5 miles of shoreline at the recreation pool level of 1582 msl. and is approximately 12 miles long. Most of the shore is wooded and very steep.

FACILITIES

In July 1981 the responsibility for administering the complex for recreation, wildlife and fire was transferred from the U.S. Army

Corps of Engineers to the U.S. Forest Service. The Corps retained responsibility for flow release from the lake, the dam, and a small portion of land surrounding it. The rest of the area turned over to the Forest Service was divided, along the county boundary, for administrative control between the Warm Springs Ranger District and the James River District. (Appendix D)

Warm Springs Ranger District (North End)

The Bolar Mountain Recreation Area provides the following developed facilities. Three camping areas having a total of ninety (90) campsites, of which twenty one (21) have electric hookup available. Each campground is serviced by a comfort station having flush toilets and hot water showers. Two trailer dump stations provide for disposal of wastes from campers with self contained units. Greenwood Point has five campsites and is accessable by boat or foot over a 4 mile trail from the Bolar Mountain Beach.

Two picnic areas with a total of 118 units are served by two shelters with toilet facilities. The Bolar Mountain Beach has a 300 foot swimming beach and bath house with toilets and showers.

During Fiscal Year 1985 the toilet system in Picnic Area I will be converted from an oil recirculating system to a water system which will be tied into the sewage disposal system serving the other developed sites. Sewage treatment is accomplished at a sewage treatment plant with a Rotating Biological Contact Disk system with a capacity of 13,000 gallons a day.

The Bolar Flat area provides for boat launching using a four lane concrete ramp. Adjacent to the ramp and parking areas is the fifty two (52) unit picnic site, which is served by one toilet building and a picnic shelter with toilet. During Fiscal Year 1984 these toilets were converted from an oil recirculating system to a water system with holding tanks, lift station, and drain field.

James River Ranger District (South End)

The majority of boating use on Lake Moomaw is through access to the lake from the Fortney Branch Boat Ramp. This facility has a four land concrete ramp, parking area and one oil recirculating toilet building which is due to be converted to a water system in the near future.

The Morris Hill area has one campground with fifty five (55) sites, three camper service buildings with flush toilets and hot showers and a trailer dump station. The Morris Hill picnic area has twenty (20) units with toilet facilities nearby at the U.S. Army Corps of Engineers' picnic site or Visitor Center.

The Coles Mountain Area has two picnic sites with seventy eight (78) units served by oil recirculating toilet systems. Coles Mountain Point is also used for canoe and small sail boat launching and bank fishing.

Toilet systems at all these facilities are scheduled to be converted from oil to water during 1985.

The South Recreation Complex is connected by a trail system to the West Virginia Scenic Trail, Alleghany Mountain Trail and the Lake Sherwood Recreation Area.

BACKGROUND FOR THIS PROJECT

The recreation facilities that were constructed by the Corps of Engineers were based on demand projections made in 1966. These demand projections were as follows: boating 12%, camping 9%, picnicking 22%, swimming 25%, sightseeing, hiking, etc., 32%.

As a part of the 1982 Clemson Short Course an analysis of needs for

Gathright Dam and Lake Moomaw was conducted. In the study Gathright Dam and Lake Moomaw - An Analysis of the Situation recommendations were made based on observed use pattern during the 1982 season, April through November. These patterns are as follows: boating 23%, camping 36%, picnicing 8%, swimming 5%, driving for pleasure, sight-seeing, etc., 28%.

The major conclusion of this study were that the recreation complex is overdesigned for picnic use and lacking in facilities for overnight stays. These conclusions have proven accurate. In 1983, on the North side, weekend camping demand was above capacity while picnic use was easily accommodated at two of the three picnic areas. Weekday camping was at approximately 35% of capacity.

The recommendation that Bolar Mountain Picnic Area I be converted to a campground is what this paper deals with.

At present a variable fee rate is being used at Bolar Mountain Recreation Area. Campsites with electric hookup are $10.00 per night, lake side sites are $8.00, and other sites are $6.00. The seasonal variable is also used. During April, when showers and flush toilets are not operational, sites with electric hookup are $6.00 per night and all other sites are $4.00. These rates are also used in November after the sewage treatment plant has been shut down and freezing of toilet facilities can occur.

STATEMENT OF THE PROBLEM

As stated in Gathright Dam and Lake Moomaw-An Analysis of the Situation, there is a shortage of campsites for weekend demand. The proposed conversion of Picnic Area I to a family campground would increase the overnight capacity of the Bolar Mountain Recreation Area and enable the Forest Service to attempt to balance supply and demand for camping at this newly developed and popular recreation complex. Should the sites and area

be developed to a level five setting or should the development be at a lower scale? The experience scale of the proposed conversion will be analyzed.

The existing recreation facilities at Bolar Mountain are categorized by the description of development scale five as described in Forest Service Manual 2331.11(c), under Recreation Experience. Pleasing environment attractive to the novice or highly gregarious camper. Opportunity to socialize with others is very important. Satisfy urbanites need for compensating experiences and relative solitude but less intensive than in classes one through four. Obvious to user that he is in secure situation where ample provision is made for his personal comfort and he will not be called upon to use undeveloped skills.

If the conversion is made to a scale other than five then a different fee schedule would have to be used based on the fact that only water and flush toilets would be offered. Double sites along the shore, about twelve (12) each, could have a rate of $12.00 per night and the other sites could have a rate of $5.00. However, with the addition of electric hookups to 77% of the sites and adding showers to the existing toilet facilities amenities and rates would be compatable with those in the other campgrounds. In this case, double sites with electric hookup could be rated at $15.00 per night and single sites with electric hookup could be rated at $10.00. The addition of hot water showers should be a high priority. Without them, use of the showers in Campground I, adjacent to the study area, will increase to an intolerable level, thereby reducing the quality of any campers experience.

LIMITATIONS

There were maintenance problems with breakages and inoperable systems (water lines, sewer lines and oil recirculating toilets) during the 1984 season which affected use patterns and gave a lower value to picnicking and camping.

Sampling methods did not provide for, a) the number of parties directed to other camping areas due to facilities being full or, b) the number of parties placed into an overflow area.

Sampling error occured with information on the type of boat a camper was using. Therefore, statements indicating that the number of fishing boats with electric trolling motors were in the majority of watercraft is based on several first hand counts and not on a large sample. Reference page 13.

SIGNIFICANCE

The experience level to which a conversion would be made would certainly affect management options for, a) the period of time the area is open and, b) the fee assessments. At the same time the experience level would be an important consideration in evaluating impacts on adjacent campgrounds and management options which would be implemented to meet that impact.

PURPOSE OF PROJECT

The proposed conversion of Picnic Area I to a family campground would increase the camping capacity in the Bolar Mountain Recreation Area and enable the Forest Service to attempt to balance supply and demand for camping at this newly developed and popular recreation complex. The Recreation Experience scale to which the conversion would be made will be analyzed.

CHAPTER II

REVIEW OF LITERATURE

A literature search was conducted with the help of the Southern Forestry Information Network (SOUTHFORNET), University of Georgia, Athens, Georgia. The search did not reveal studies similar to this one.

The following literature was useful in setting the problem into perspective. In the report Gathright Dam and Lake Moomaw - An Analysis of the Situation problems associated with management of the recreation complex were discussed and recommendations for solutions were presented. The shortage of available campsites for real and potential demand was recognized. Underutilization of some day use facilities was documented. The recommendation is to get better utilization of developed facilities and better meet present and future overnight demand.

In the Proposed Land and Resource Management Plan for the George Washington National Forest the preferred alternative forecasts developed recreation demand (ROS class Roaded Natural) to double within the next fifty years. The plan allows for the expansion of selected existing developed recreation areas. Within the Gathright Dam and Lake Moomaw complex, Bolar Mountain Picnic Area I would be converted to a campground.

Dwyer and Bowes in their article Benefit-Cost Analysis for Appraisal of Recreation Alternatives state that "Benefit-Cost Analysis assesses the net value of goods and services that are expected to result from undertaking a management option. This value can be used for comparison with those expected from alternatives. The difference between benefits and costs is termed net benefits, and is intended to be a measure of the gain in national social welfare. The benefit-cost test is a potential Pareto criterion. Under a true Pareto criterion, an alternative is considered worthwhile if it makes no one worse off and at

least someone better off; by this criterion, it would be necessary for those who benefit from an option to make compensatory payments to those who lose. Under the benefit-cost test, however, an option is considered worthwhile if such compensation could be made, even though it may not actually be made."

They also state that a management option for estimating recreation benefits requires sampling of the users of existing areas and applying some economic and statistical expertise in obtaining an answer.

James Truncer believes that "people support those services which they beleive are of value to a quality life and for which they feel they are getting a good return on their investment." He also states in the article Enhanced Recreation Opportunities that "The dynamic interface between rural community and urban development is the very reason why -- the resource manager will continue to find increased public support for preserving open space and providing enhanced recreational opportunities."

The conclusion drawn in Analysis of Personal Consumption Expenditures as Related to Recreation 1946-1976 is that "recreation expenditures have consumed an increasing portion of growing personal budgets." It is believed that this trend will continue for the next two decades (1980's and 90's). "Recreation will continue to be an important part of personal consumption expenditure."

In determining the cost-benefit method used for this paper a review was made of several papers on the subject and it is felt that Professor Dale McFarlane of the School of Business and Technology, Oregon State University has the method best suited for what is presented. In Chapter III, "Cost-Benefit Analysis in USFS Decision Making", from his text Analytical Methods and Computer Applications in USFS Planning and Decision Making he observes "In many ways, the process of evaluation

of outcomes associated with decisions made by the USFS and other public and service institutions is more complex than similar types of analysis done in the private sector of our economy. In addition to the complications faced by the private sector in evaluating alternative outcomes, the USFS has two relatively unique problems. First, the decision horizon (the difference in time between realization of the consequences of a decision and the time at which the decision must be implemented) is usually greater for USFS decision problems than it is for decision problems facing the private sector. Whenever the decision horizon is increased, one can expect a corresponding increase in the degree of uncertainty associated with evaluation of predicted outcomes. Second, revenue received by the government as a consequence of allocated resources to a USFS project is usually an unreliable indicator of the worth of that project. USFS personnel cannot rely on the economic marketpalce to establish a value on the resources they provide. Nevertheless, the name of the game in today's society is 'accountability'. The public wants to know what benefits they are to receive as a consequence of allocating resources to the USFS."

CHAPTER III

PROCEDURES

INTRODUCTION

The proposed conversion of Picnic Area I to a family campground would increase the camping capacity in the Bolar Mountain Recreation Area and enable the Forest Service to attempt to balance supply and demand for camping at this newly developed recreation complex. The Recreation Experience scale to which the conversion would be made will be analyzed.

APPROACH

The direction outlined was to determine camping use during the third year of operation at the Bolar Mountain Recreation Area. Information was also needed reflecting nationwide camping trends for both private and public sectors. Use data was collected to provide information from which predictions and recommendations could be made.

COLLECTION OF DATA

Campground use data was collected for Campgrounds I, II, and III at the Bolar Mountain Recreation Area. Literature was reviewed which provided data on camping equipment and recreation trends for both public and private sectors.

Types of data collected included:

A. Camping at Bolar Mountain Recreation Area
   1. Sites utilized
   2. Type of equipment
   3. Type of boat
   4. Number of people in party
   5. Number of nights registered

B. Camping

1. National Trends
   a. Type of equipment
   b. Number of sites
   c. Facilities
   d. Fees

C. Boating Use

1. Lake Moomaw - RIM
2. National Trends

The area administrator, forest technicians, and volunteer campground hosts were instructed on how to record information on the campground registration sheet. There were some gaps in this data but not significant in scope to diminish the overall findings.

Compliance check forms were complete. RIM documents were used to determine other activity rates.

Reliance was made on other recreation studies measuring nationwide trends in outdoor recreation, private campground use, recreational equipment sales, and percent of income spent on recreation.

The visitor use data was used to determine turnover rates, camping equipment preference, number of campers with boats specifically designed for fishing due to demand for electricity to recharge trolling motor batteries.

National trend data was used to determine activities growth and potential impact on facilities at Bolar Mountain Recreation Area.

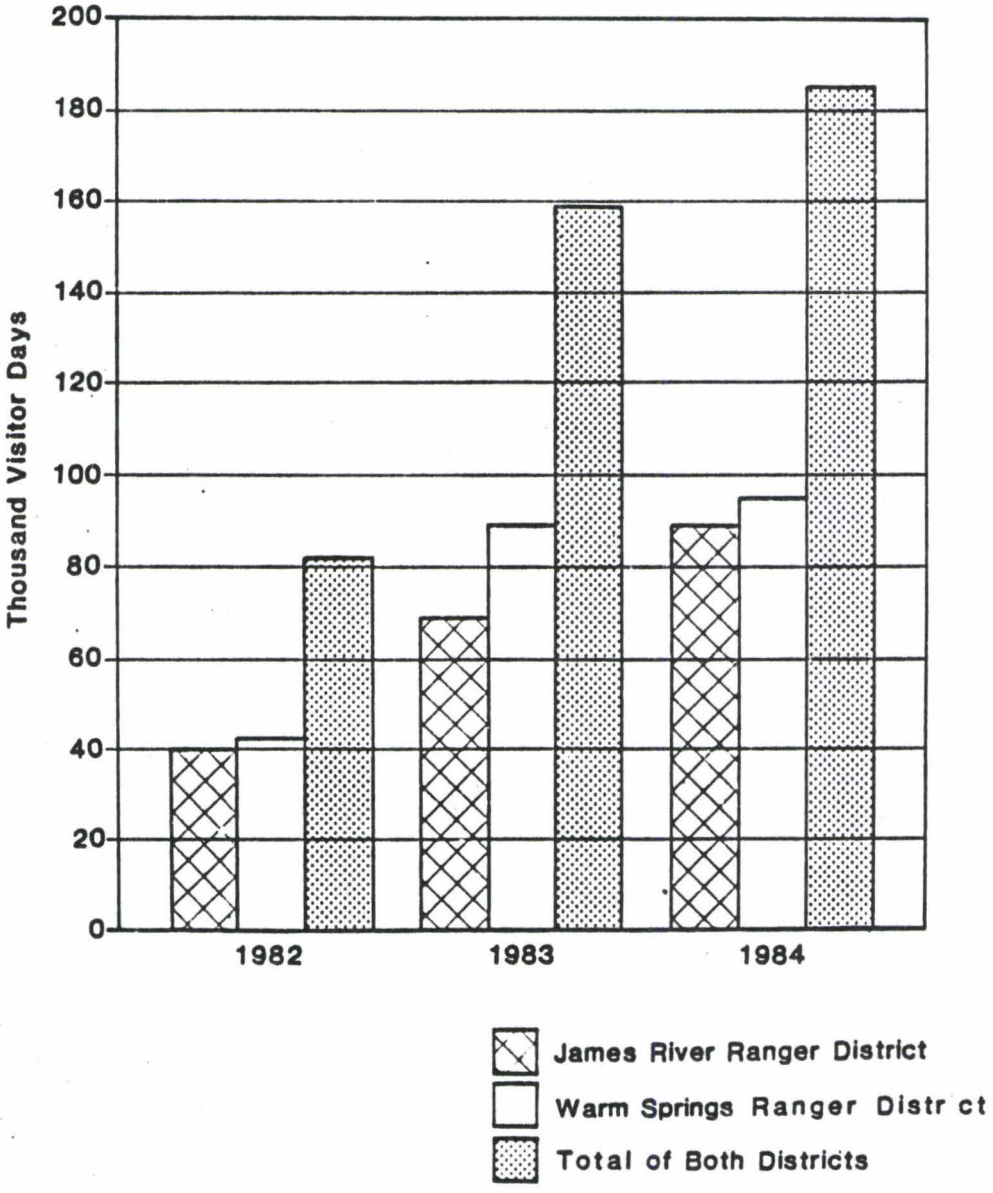
Private campground use both local and national was analyzed to determine what the successful operations offered the visitor.

Data for recreational equipment including self contained RV's, trailers, and boats was obtained to determine future campsite needs so that proposed development could be at a level to meet them.

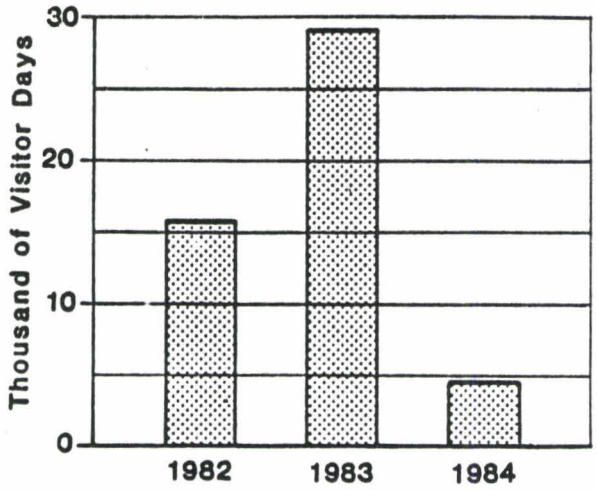
Data from national studies on personal income spent for recreation was used as a measure of desire to participate in recreational activities.

Recreation Visitor Days
Gathright Dam And Lake Moomaw

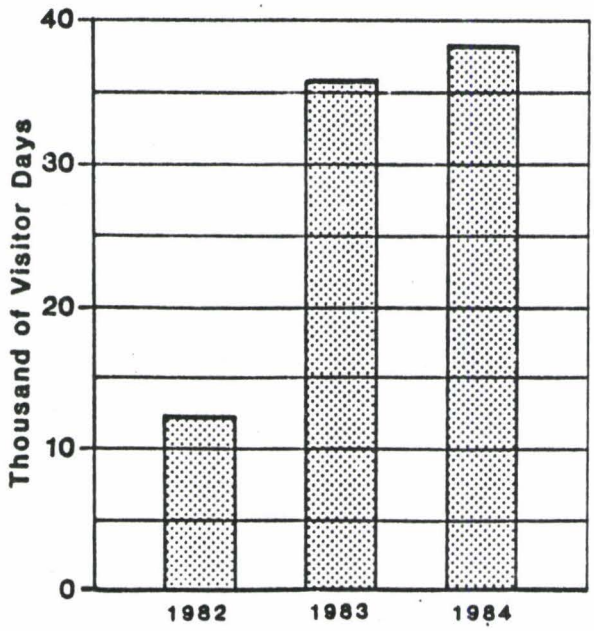
TABLE 1



PICNIC USE GATHRIGHT DAM AND LAKE MOOMAW
WARM SPRINGS RANGER DISTRICT
TABLE 2



CAMPING USE BOLAR MOUNTAIN RECREATION AREA
WARM SPRINGS RANGER DISTRICT
TABLE 3



CHAPTER IV

ANALYSIS OF DATA

CAMPING AT BOLAR MOUNTAIN RECREATION AREA

Recreation growth at Gathright Dam and Lake Moomaw has occurred at a moderate rate with overall use being moderate to high. Local newspaper articles and word of mouth have been the primary source of spreading the information about the new recreation complex. Articles in Field and Stream and The Washington Post have carried the word across the country.

Recreational visitor days of use for 1982, 1983, and 1984 are 81,600, 159,500 and 184,800 respectively. (See Table 1, page 12a).

Demand for outdoor recreation at Lake Moomaw is expected to continue growing at a rate which follows the national trend.

In Gathright Dam and Lake Moomaw-An Analysis of the Situation it was found that use by activity was different than predicted by the Corps of Engineers. Boating and camping use was higher than predicted and picnicking use was less. (See Table 2, page 12b). Boating use was 23%, camping 36% and picnicking 8% of the total use. This trend was followed in 1984.

Camping use at the Bolar Mountain Recreation Area and Greenwood Point totaled 38,400 recreation visitor days in 1984. This represents a 7% increase over 1983 use and a 67% increase over 1982 use. (See Table 3, page 12b). The 1984 use season was marked with a high percentage of rainy days during both the week and weekend periods.

Fees collected at three campgrounds amounted to $48,663 for calendar year 1984. This averaged $540.70 per campsite.

At the same time ninety (90) sites generated 36,900 recreation visitor days out of the 38,400 camping RVD's. At this rate each "paying" RVD generated $1.32.

The type of equipment used for camping was divided into three major categories: Tents, trailers, and RV's. Use in these categories was 48% for tent campers, 27% for trailer campers and 25% for RV campers.

Campers at Lake Moomaw are indeed drawn to the area by its beauty and the opportunity it presents for water based recreation in addition to other traditional forest pursuits.

Boating use represents 23% of the use at Lake Moomaw. Thirty-five (35) percent of the campers at Bolar Mountain Recreation Area brought one or more boats with them; of these, 31% were fishing boats. At this rate, 12% of the campers were actively involved in boat fishing and the majority of them were equipped with the "bass boat". This boat has an electric trolling motor in addition to the primary gasoline motor.

The Virginia Commission of Game and Inland Fisheries conducted a reservoir survey from April 1, 1983 through March 31, 1984. "Results of the creel survey show very heavy fisherman utilization and very good success when compared with recent data collected at other Virginia impoundments. Gathright showed the highest per hectare (138.13 hours per ha.) fishermen usage of any Virginia reservoir. This is surprising in that the lake is located in a relatively remote area, is generally unknown, and has no commercial development. The attraction is due partially to the fact that this is a new impoundment and, therefore, people are both curious to see the new lake and to experience good early fishing. In addition, the lake is one of the state's most scenic impoundments." [1]

[1] Reservoir Investigations, Region I, Dist. 2, VA Dingell-Johnson Project F-39, Gathright Reservoir, Larry O. Mohn and Paul E. Bugas, Jr. April 83-March 84.

CAMPING USE IN THE PRIVATE SECTOR

In 1981 the National Campground Association conducted an economic analysis of 209 campgrounds nationwide. The objective of the survey was to provide descriptive statistics about the industry for:

- Improving understanding of private campground economics
- Developing a data series on campground economics which will provide an indicator of trends in the campground industry
- Examining the performance of the industry for the 1980 season
- Providing a basis for evaluating individual enterprises against regional and industry-wide averages.

The 209 campgrounds represent about 3% of the nation's camping enterprises and about 4% of the commercial campground capacity. The data is presented as indicative of industry averages.

Average campground statistics are as follows:

Campground size	--	60 acres
Total developed sites	--	140
Overflow capacity	--	30 sites
Maximum capacity	--	609 persons
Comfortable capacity	--	484 persons
Days operated at maximum capacity	--	25
1980 attendance as a percentage of 1979	--	105%
Percent open all year	--	50%
Total employees	--	9

Peak season -- June 1 to September 1

Per night camping fee (median) -- $8.75

Years in operation -- 9

Receipts -- $141,000

Cost of Operation -- $115,700

Ninety-two (92) percent have a campground store, 77% a recreation hall, 86% playgrounds, 99% hot showers, 84% laundry facilities and 99% modern toilet facilities.

The major single source of income is camping fees, generating about 60% of the average campground receipts.

Premium fees for the best sites, usually waterfront, were charged by 11% of the campgrounds in 1980 versus 5% in 1979. Other premium fee rates used were for weekends, holidays, special events or special campsite features. Discounts were offered for off peak season use, group use, senior citizens and discount coupons.

The commercial campground industry is a billion dollar contributor to the economy and is growing. The 250 million camper days served by private enterprise in 1980 represents 71% of the total estimated days spent camping at all public and private developed sites in the nation. While the number of camping enterprises continues to decline slightly (0.5% per year), the capacity of the remaining enterprises is growing by an estimated 2% per year, easily offsetting the loss in enterprise.

The average private campground of one hundred and fourty (140) developed sites had thirty two (32) for tents without hookups and one hundred eight (108) sites with some combination of utility connections.

In the southern region of the United States 92% of the campgrounds provide electric hookup and water, 66% sewer, while about 16% provide no hookups. Ninety-nine percent of the campgrounds provide flush toilets and hot showers, 93% provide dumping stations.

Profitability of campgrounds is an extremely complex issue. An examination of financial reports indicated that 27% of the campgrounds reported a loss, ranging from $1,000 to $103,000. Those reporting a profit, about one out of two, made a profit of less than $14,000 or less than 10% return on gross expenditures.

Those ranking in the top 50% of making a profit tended to have been in their present ownership longer, and have substantially larger numbers of developed sites, days of peak operation, competitors, and higher occupancy levels.

The profitiability distribution of campgrounds providing income data in 1980 where 10% had a loss of $11,000 or more, 17% had a loss of between $10,000 to $1,000; 37% broke even or had a profit of up to $14,000; 25% had a profit of between $14,000 to $50,000; 8% had a profit of between $50,000 to $99,000 and 3% had profit of $100,000 or more. The profit was measured as pre-tax profit.

The data of the survey reflects an efficient, well-managed and healthy industry.

NATIONAL TRENDS FOR OUTDOOR RECREATION

Leisure in the United States is supported by a 259 billion dollar a year industry. There has been an insurgence in physical fitness, "risk" experiences, and outdoor festivals. There are one hundred and twenty non-work days in the year and the way in which leisure is used affects our culture.

Personal expenditures for recreation have remained stable at about 6.5% of income as found in national surveys from 1970 and 1982. Travel and away from home spending is growing.

The recreational vehicle industry does an 8 billion dollars business annually and employes some five million people. Nine point eight (9.8) percent of vehicle owner households own an RV. There are about seven and a half (7.5) million RV's on the road today and the owners average twenty-three days of use each year.

Rate of RV ownership by sections of the country show the south with 6.6%, north central 8.8%, northeast 8.4%, and the west 16.9%. Individuals in the 35 to 54 age group represent the largest owner group. As our population grows, an increasing number will be in the retirement age group and this group is an important segment of outdoor recreation users.

Recreational vehicle sales are on an upswing. Downsizing, technological advances being incorporated into design and service features have played a role in attracting buyers, both new and replacement sales were just under 400,000 units in 1984. There is also an increase in the rental RV business including Ryder Truck rental and some private campgrounds.

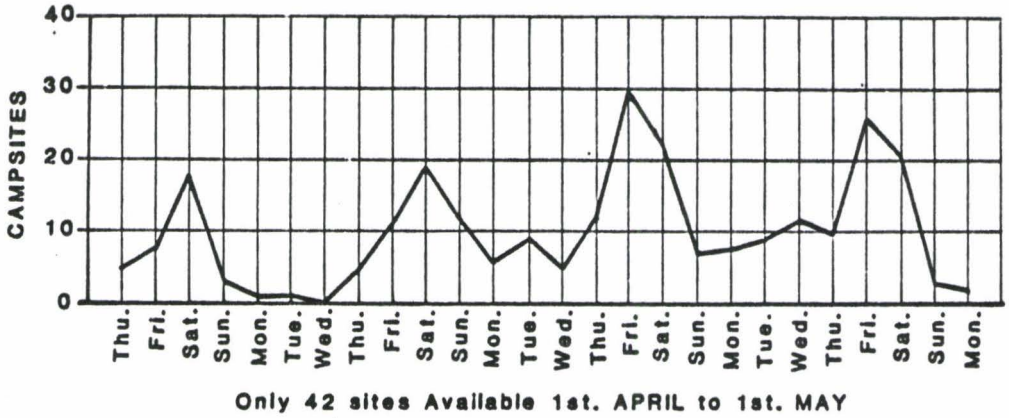
The recreational boat industry is also experienceing growth. It is a 10 billion dollar a year industry. Between 1970 and 1982 there was a 45% increase in boat ownership. It went from 8.8 million in 1980 to 12.8 million in 1982. Twenty-eight percent of the general population, about 53 million people 12 years of age or older, participate in various kinds of boating activities of this, 19% participate in motorboating. This is impressive, given the investments of time and money involved. Boating participation also holds up well through middle age.

Camping as a whole has about doubled its population participation rate in the past 22 years (1960 to 1983). Twenty four (24) percent of outdoor recreationist state that they are campers. Of these fifty one (51) percent cite it as "Particularly enjoyed". Camping in developed campgrounds was enjoyed by a majority at approximately thirty three million people twelve years of age or older. This represents seventeen (17) percent of those who camp.

In 1984 some sites within the National Forest system experienced an increase in camping use but overall there was a decline. Answers as to why, are very difficult to analyze. Factors which may have contributed to the decline are higher fees, travel overseas, time share plans on condominiums and private campsites, travel distances reduced, and fewer days spent at the campground.

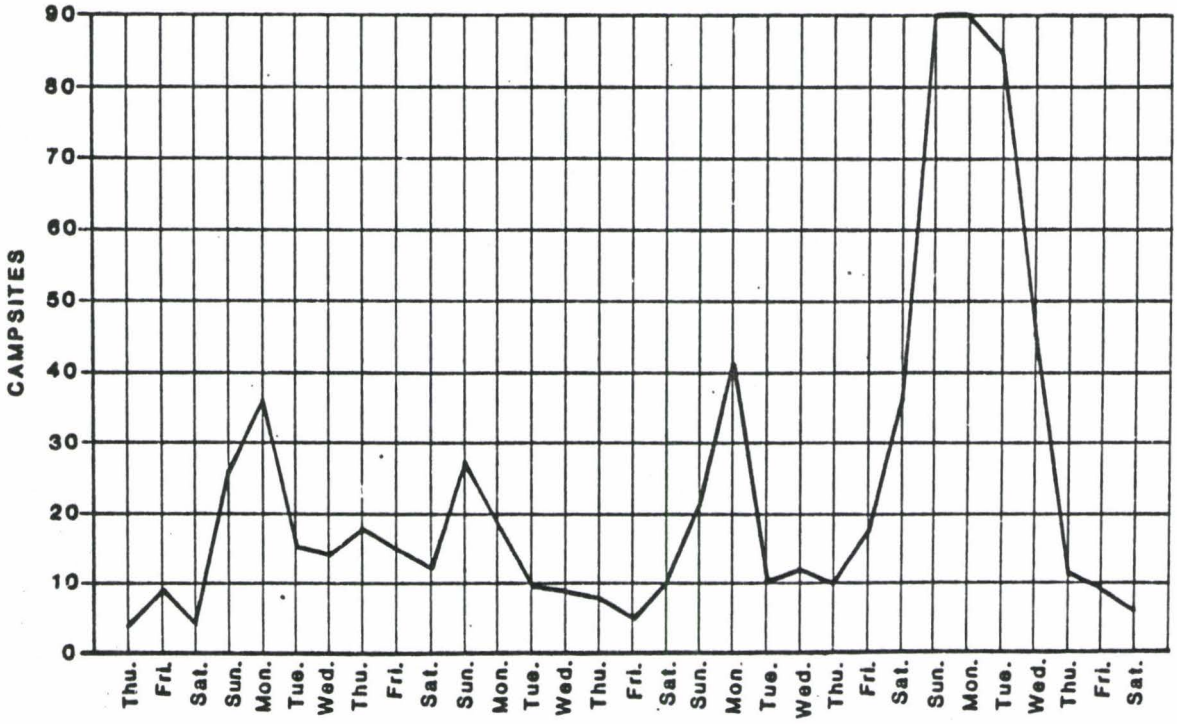
BOLAR MOUNTAIN
Recreation Area
Campsite Use 1984
TABLE 4

APRIL

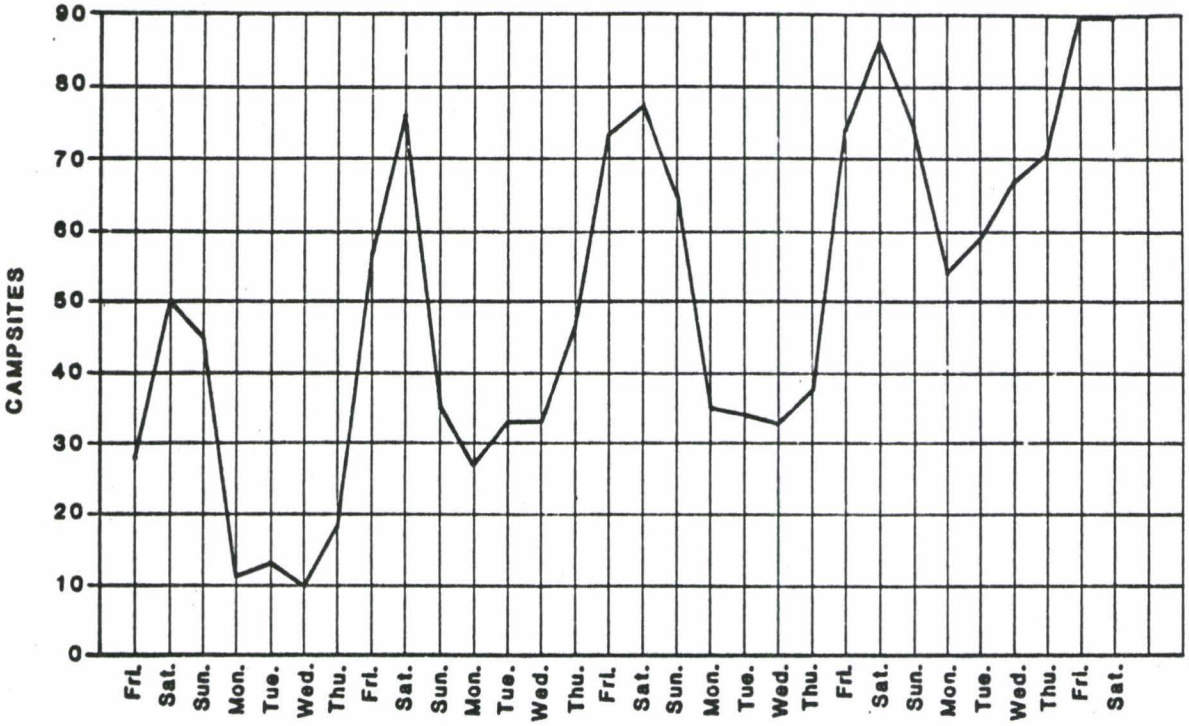


Only 42 sites Available 1st. APRIL to 1st. MAY

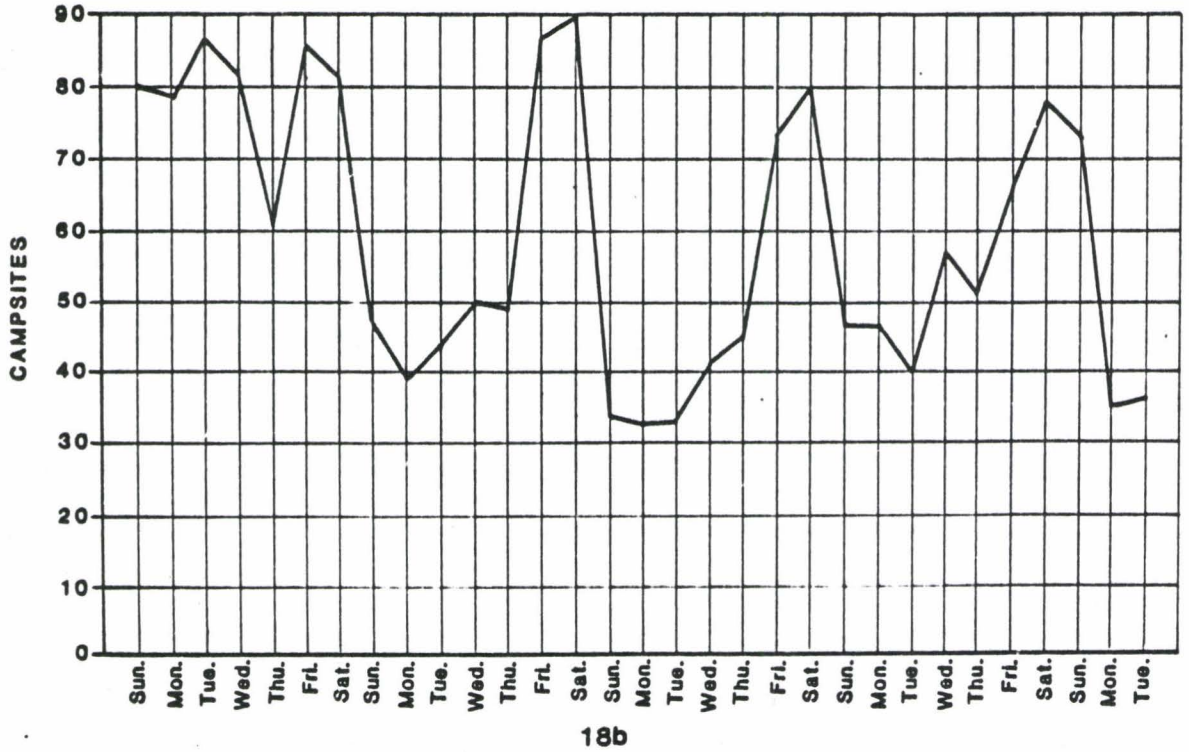
MAY



JUNE


CAMPSITES
90
80
70
60
50
40
30
20
10
0
Frl. Sat. Sun. Mon. Tue. Wed. Thu. Frl. Sat. Sun. Mon. Tue. Wed. Thu. Frl. Sat. Sun. Mon. Tue. Wed. Thu. Frl. Sat. Sun. Mon. Tue. Wed. Thu. Frl. Sat.

JULY


CAMPSITES
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80
70
60
50
40
30
20
10
0
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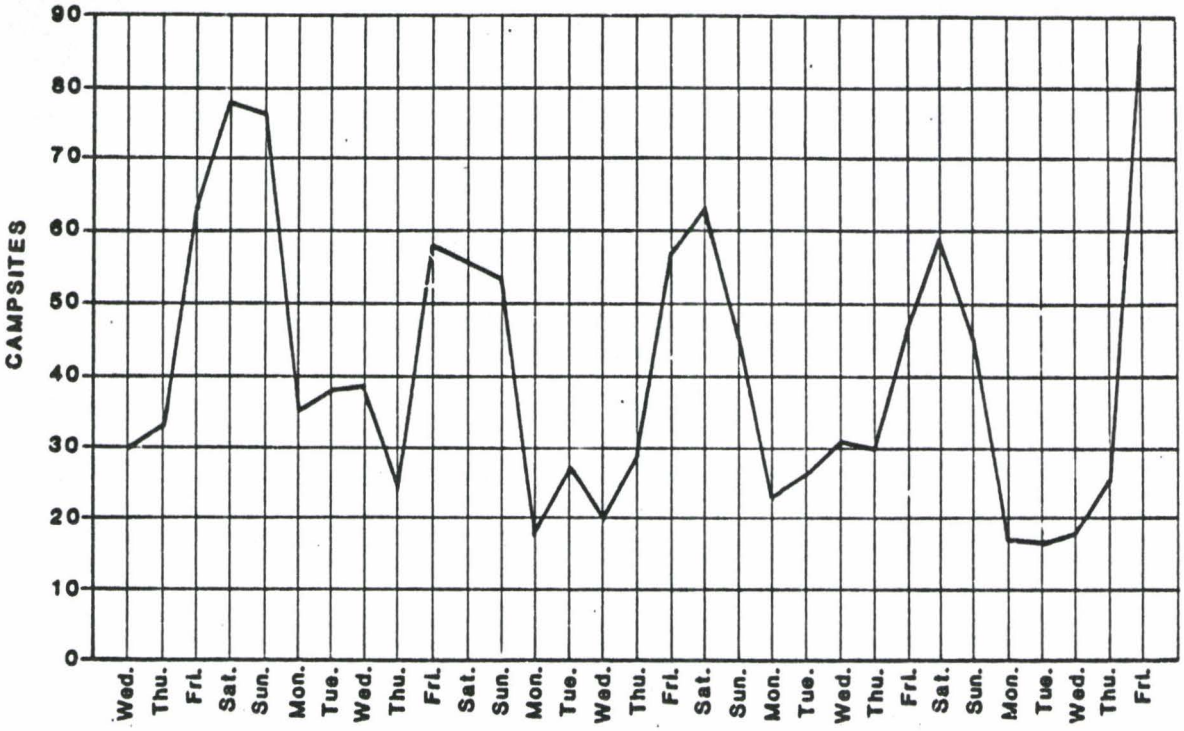
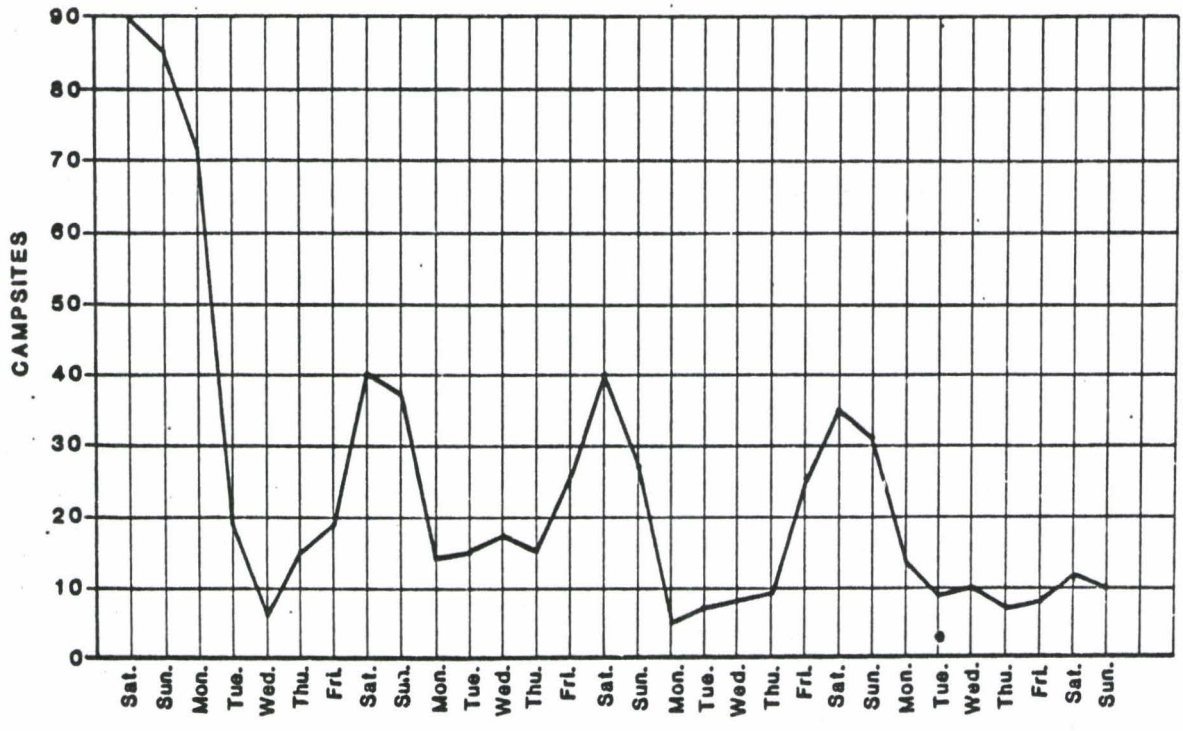
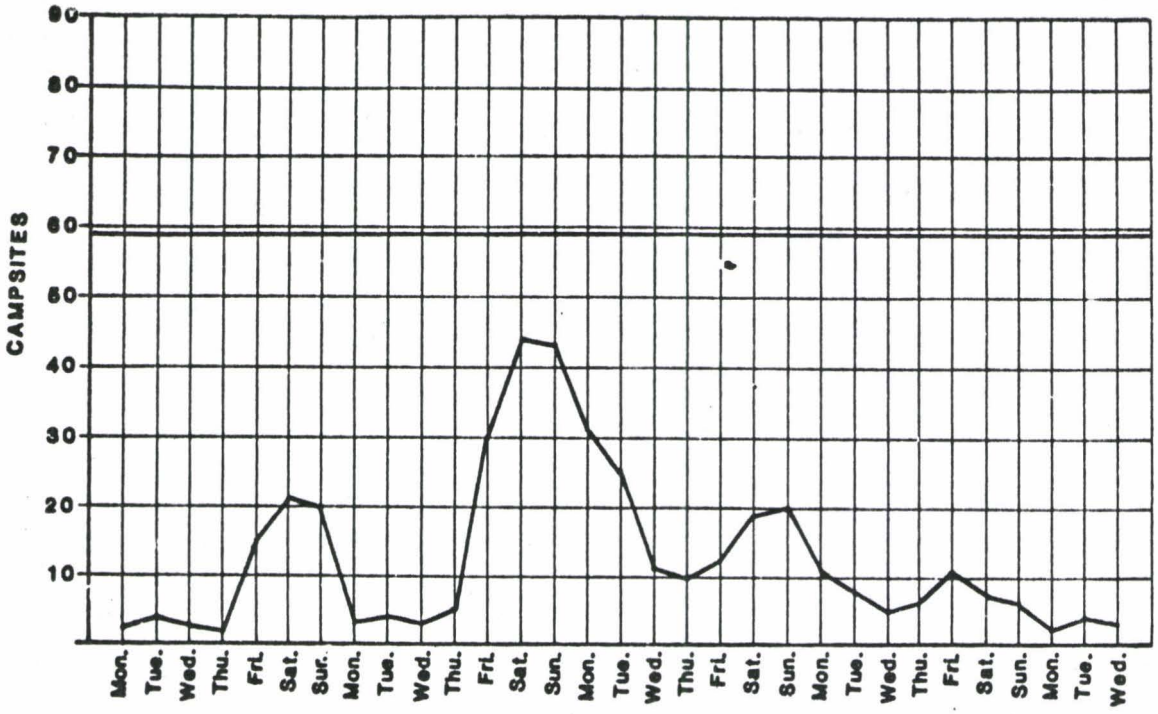
AUGUST



SEPTEMBER



OCTOBER


CAMPSITES
90
80
70
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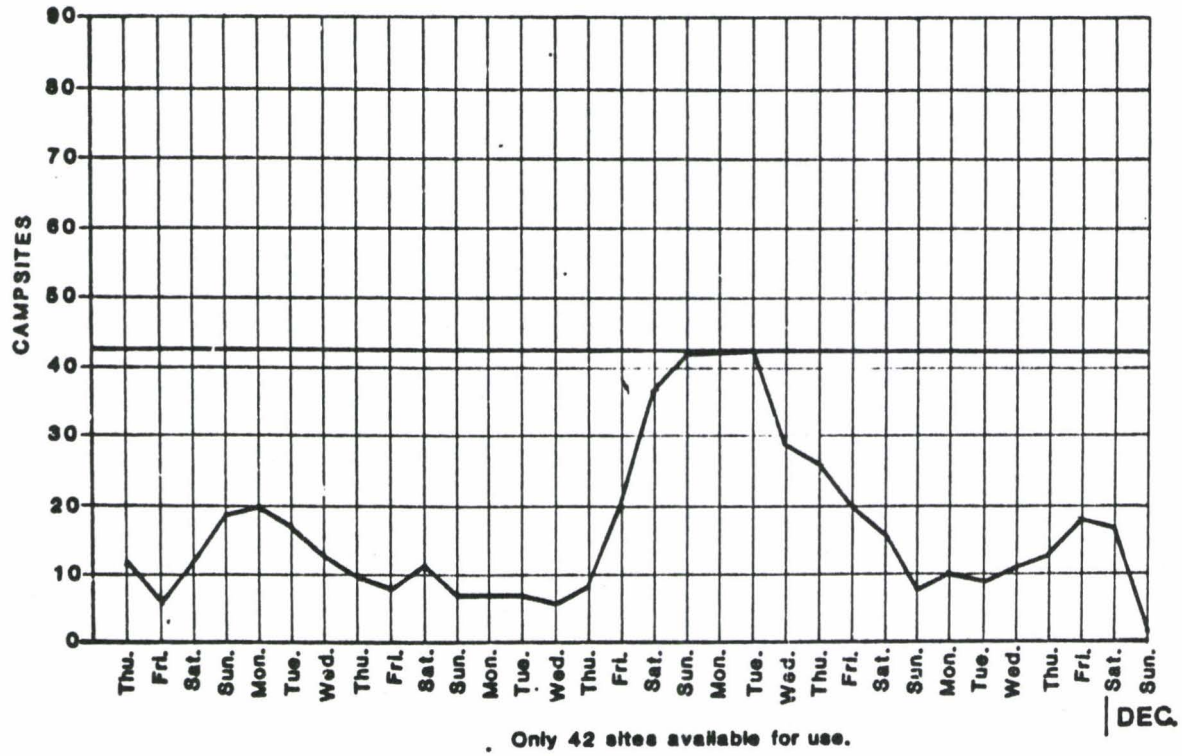
50
40
30
20
10
Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed.

Only 58 sites available for use.

NOVEMBER



Only 42 sites available for use.

CHAPTER V

SUMMARY AND CONCLUSIONS

The proposed conversion of Picnic Area I to a family campground would increase the camping capacity in the Bolar Mountain Recreation Area. This would enable the Forest Service to attempt to balance supply and demand for weekend camping at this newly developed recreation complex. Cost benefit analysis of three possible experience level conversions were made. (Appendix C)

SUMMARY

Data was collected at three campgrounds and analyzed for the number of sites utilized and length of stay, type of camping equipment, type of boat if present, and number in the party. A review of studies on national trends in outdoor recreation was made to determine campers preference in types of campgrounds, campsite amenities, and equipment. A review of studies on the private campground industry was made to determine what services were offered and what their market share of camping is.

CONCLUSIONS

Camping at Bolar Mountain Recreation Area is very popular and additional sites are needed to accomodate the weekend demand. (See Table 4, page 18a-18d). Had the 1984 season been less rainy a dramatic increase over 1983 use would have occurred as it did in 1983, when compared to 1982 use.

The study Gathright Dam and Lake Moomaw-An Analysis of the Situation showed that the area has the potential for destination camping and evidence of this is apparent when length of site occupancy by parties and their origin is analyzed.

Use of trailers and RV's for camping shelter is higher than tent usage which corresponds with national usage for developed campgrounds. There is a tendency for tent campers to "graduate" to trailers or RV's as they grow older and their family matures.

RV and trailer use is increasing by popular demand with retired individuals. Population studies show that our society is aging and with this we can expect future use in campgrounds to be composed of a higher percentage of retired people using trailers and RV's.

Increased leisure time may be one of the most important factors in recreation demand. Either through longer stays or more frequent short term use.

The private campground industry is healthy and has a 71% share of the market. It appears that competition is very good for the industry as the best managed can be quite profitable. The most successful private operations offer the camper electric hookup, hot showers and flush toilets in addition to such things as swimming pools, cable TV, campground stores, restaurants and food delivery. However, none of the private complexes can survive on just campsite fees; they need to sell other items and use of other attractions. Within the immediate market area, in Bath and Alleghany Counties, of Gathright Dam and Lake Moomaw there are three advertised private campgrounds. Each is situated on a river frontage, offers the camper electric hookup at an additional cost, provides flush toilets, hot showers and sewage disposal. Base camping fees range from $5.00 to $7.00 per night. In comparison, camping fees at the Bolar Mountain Recreation Area are $10.00 per night for sites with electric hookup, $8.00 per night for lake side sites and $6.00 per night for all other sites.

Within the National Forest system 1984 use was down which corresponded to an increase in camping fee charges. In reflection the fees were not necessarily the reason use decreased. Campers want "value" for money spent and if they do not receive additional services for their money they will stop using an area. Camping use at Bolar Mountain Recreation

Area indicates that campers are willing to pay for additional ammenities such as electric hookup and hot showers. For many individuals, camping does not mean complete change in life styles or challenging their abilities to survive with primative skills but rather they want a temporary change to enjoy a less developed setting. Comments and questions received from campers are quite often about such things as lack of water taps at each site, desire for electric hookup at more sites, especially from the campers with bass boats, and more shower stalls in the restrooms.

RECOMMENDATIONS

It is recommended that the proposed conversion of Picnic Area I to a campground be given additional study after several more years of operation to ascertain whether weekday demand will increase to the point that expansion is economically justified. The present system of using other areas at the Lake for weekend overflow does satisfy the users desire to recreate at Lake Moomaw.

If it is found that additional campsites are needed it is recommended that the current proposed development plan be implemented.

The physical area of Picnic Area I will limit the number of campsites which can be developed. The proposed development plan depicts a total of fifty sites. They would be compatable with sites in the existing campgrounds in spacing between sites, designated parking spurs, tent pads, fire grills, lantern posts and tables. Twelve of the sites would be double sized to accomodate two families. If developed on the main point of land they would be more attractive to small groups. (See Appendix E). Five sites would be for walk-in or boat-in tent campers.

With the addition of fifty sites the total number of campsites available at Bolar Mountain would increase to one hundred and forty. The Person-at-One-Time capacity would be increased by three hundred and thirty five.

As observed in the private sector, with more campsites available the more profitable the operation and operation and maintenance costs become spread over more users thereby increasing the efficiency of the O & M dollar.

The Benefit-Cost Analysis (Appendix C) were prepared using the following estimated dollars:

Construction of campsites with unique construction problems:		
Ten each (10) at $5,000	Total	$50,000
Construction of other campsites with no unique problems. Forty each (40) at $1,000	Total	$40,000
Construction of roadway		$55,000
Modify existing toilet facilities for showers		$20,000
Place electric boxes at forty five sites		$22,500
Annual operation and maintenance cost		$20,500

It is recommended that the proposed conversion be accomplished as stated in Alternative A. Although a comparison of the alternatives indicates that A does not project the best ratio, other factors must be considered.

1. The climate in western Virginia is moderate. Temperatures during the summer range from average highs of 85°F to average lows of 58°F. Evening campfires are not only aesthic but often necessary when campers socialize outside their shelters. Cold water showers are unreasonable.

   Present weekend use of the Bolar Mountain Recreation Area campgrounds produces overcrowding of the existing toilet and shower facilities. Without the addition of showers to the proposed conversion, Campground I toilet/shower facilities use would increase beyond reason. Registered campers in Campground I would be frustrated as would those using the converted facility. Management action to control use, such as, only allowing campers into the campground they are registered in, would appear as another 'negative' to the visitor.

Addition of showers would be a benefit to the sewage treatment plant which is designed for a capacity of 13,000 gallons effluent daily, that has not been realized. Due to the nature of the facility, it operates more efficiently at this higher capacity. Toilet use alone from the conversion site will not bring the plant up to its efficient operating level. However, the addition of showers would bring the plant to capacity and improve the efficiency of its operation.

2. With a majority of campers using trailers and RV's equipped with gasoline motor generators, and many operating them, noise becomes a distracting element in having a quality camping experience. Electricity available at campsites will reduce that negative element and allow modern campers to enjoy their camping trip as they desire. A comparison of campsite use indicates that the twenty campsites with electricity available are used on an average twenty nine(29) percent of the time from Memorial Day through Labor Day. The thirty eight lake side sites are used on an average of forty six (46) percent of the time and the remaining thirty two sites are used twenty five (25) percent of the time. The boat fishing campers tend to use the lake shore sites so that they can moor their boats close to their campsites and it is this user that requests additional electric hookups be made available.

3. Future operation and maintenance funding for recreation will either stay at the same level or decrease. Proposals for increasing fees and placing fees on other general forest activities are currently being evaluated at the national level. Placing fees in a 'closed loop' account so that the money collected would return to where it was collected has been proposed and has merit because campers are quite willing to pay for services when they can 'see' their money at work. Concession operation of campgrounds is another approach to meet the decrease in recreation funding. However, the desire is for the concessionaire to profit in the operation and this can be given more assurance if the campgrounds have the basic ammenities the camping public desires.

"The evidence is strong that recreational satisfaction, among campers at least, is responsive to changes in management, and that improved management, in turn, produces quantifiable gains to management in the form of longer and more frequent visits."[1]

[1] Satisfaction Monitoring for Quality Control in Campground Management by Wilbur F. LaPage and Malcolm I. Bevins, page 6.

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APPENDIX-------A

DATA COLLECTION FORMS

CAMPGROUND FEE PAYMENT COMPLIANCE

SITE NO.	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
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25							
26							
27							
28							
29							
30							

CAMPER REGISTRATION FORM

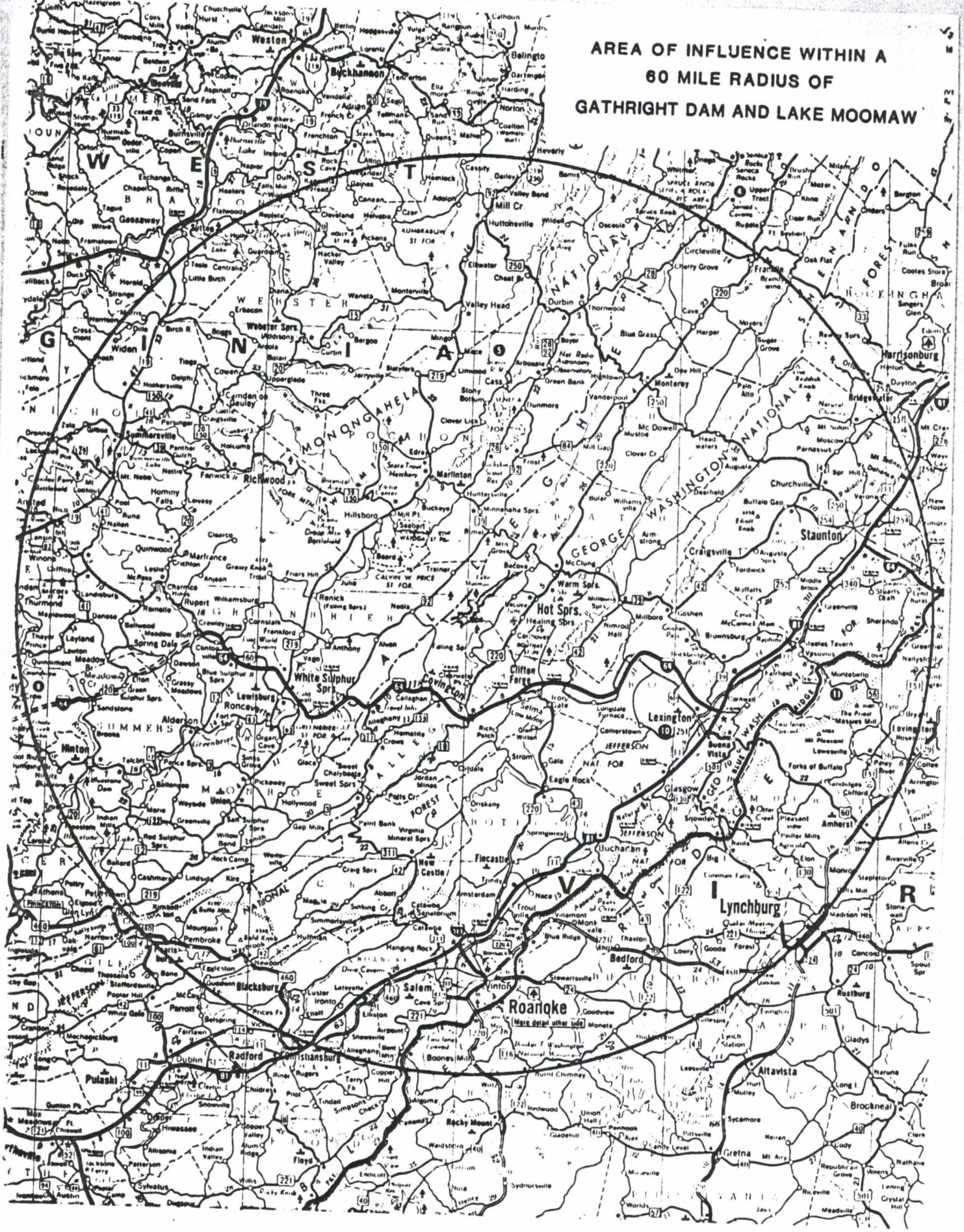
LAKE MOOMAW CAMPGROUND

DATE TIME	SITE NO.	NAME	HOMETOWN CITY	HOMETOWN STATE	VEHICLE	LICENSE	TYPE CAMPING EQUIPMENT	NO. IN PARTY	NIGHTS REG.

APPENDIX---------B

ZONE OF INFLUENCE

AREA OF INFLUENCE WITHIN A 60 MILE RADIUS OF GATHRIGHT DAM AND LAKE MOOMAW



APPENDIX---------C

BENEFIT AND COST ANALYSIS
(PRESENT VALUE)

Alternative B Assumptions of Analysis:

1. 50 campsites constructed with no electric hookup.
2. Warm water showers incorporated into existing toilet buildings.
3. At capacity on weekends from Memorial Day thru Labor Day.
4. At 35% capacity on weekdays.
5. Pre and post season use at 35% of capacity except for two; beginning of hunting season periods.
6. All double sites (12) $12.00, 15 sites $8.00, and 23 sites $6.00.

Pre and post season rates $8.00 double (12), $4.00 all others (38).

Value of fees collected	=	$35,971
Intangible Value	=	$61,500
TOTAL ANNUAL BENEFITS		$97,471

Present value of benefits to be received is $665,415.

Cost of conversion	$ 165,000
Cost of annual O & M	$ 20,500
TOTAL COSTS	$ 185,500

Benefit-Cost $3.59

Alternative C Assumptions of Analysis:

1. 50 campsites constructed with no electric hookup.
2. Use existing flush toilets, no showers added.
3. At capacity on weekends from Memorial Day thru Labor Day.
4. At 35% capacity on weekdays.
5. Pre and post season use at 35% of capacity.
6. All double sites $10.00 (12), 15 sites $6.00 and 23 sites $4.00.

Pre and post season rates (12) $8.00 double, $4.00 all others (38).

Value of fees collected	=	$ 34,531
Intangible value	=	$ 61,500
TOTAL ANNUAL BENEFITS		$ 96,031

Present value of benefits to be received is $655,584.

Cost of conversion	$ 145,000
Cost of annual O & M	$ 20,500
TOTAL COSTS	$ 165,500

Benefit-Cost $3.96

COMPARISONS OF ALTERNATIVES

	A	B	C
TOTAL ANNUAL BENEFITS	$ 108,880	$ 97,471	$ 96,031
PRESENT VALUE OF BENEFITS	$ 743,302	$ 665,415	$ 655,584
TOTAL COSTS	$ 208,000	$ 185,500	$ 165,500
ANNUAL O & M COST	$ 20,500	$ 20,500	$ 20,500
BENEFIT-COST	$ 3.57	$ 3.59	$ 3.96

Benefit-Cost Analysis were prepared for three alternatives which follow. Estimate of camping use was made for a ten year period based on 1984 use. Intangible benefits are based on the RPA dollar value of $3.00 per recreation visitor day (RVD). Additional benefits are from user fee income.

The Benefit-Cost ratio for the 10 year period was discounted at 7.62 percent.

Alternative A Assumptions of Analysis:

1. Sites constructed with electric hookup at 45 out of 50.
2. Warm water showers incorporated into existing toilet building.
3. At capacity on weekends from Memorial Day thru Labor Day.
4. At 35% capacity on weekdays.
5. Pre and post season use at 35% of capacity.
6. All double sites (12) $15.00, 33 sites at $10.00 and 5 tent only sites at $6.00.

   Pre and post season rates $8.00 double; $6.00 single; $4.00 tent.

   Value of fees collected $47,380.

   Based on 1984 rate of 410 RVD's - 50 sites would =

   20,500 RVD's X RPA rate of $3/RVD = $ 61,500

   TOTAL ANNUAL BENEFITS $108,880

Present value of benefits to be received is $743,302.

Cost of conversion	$ 187,500
Cost of annual operation and maintenance	$ 20,500
TOTAL COSTS	$ 208,000

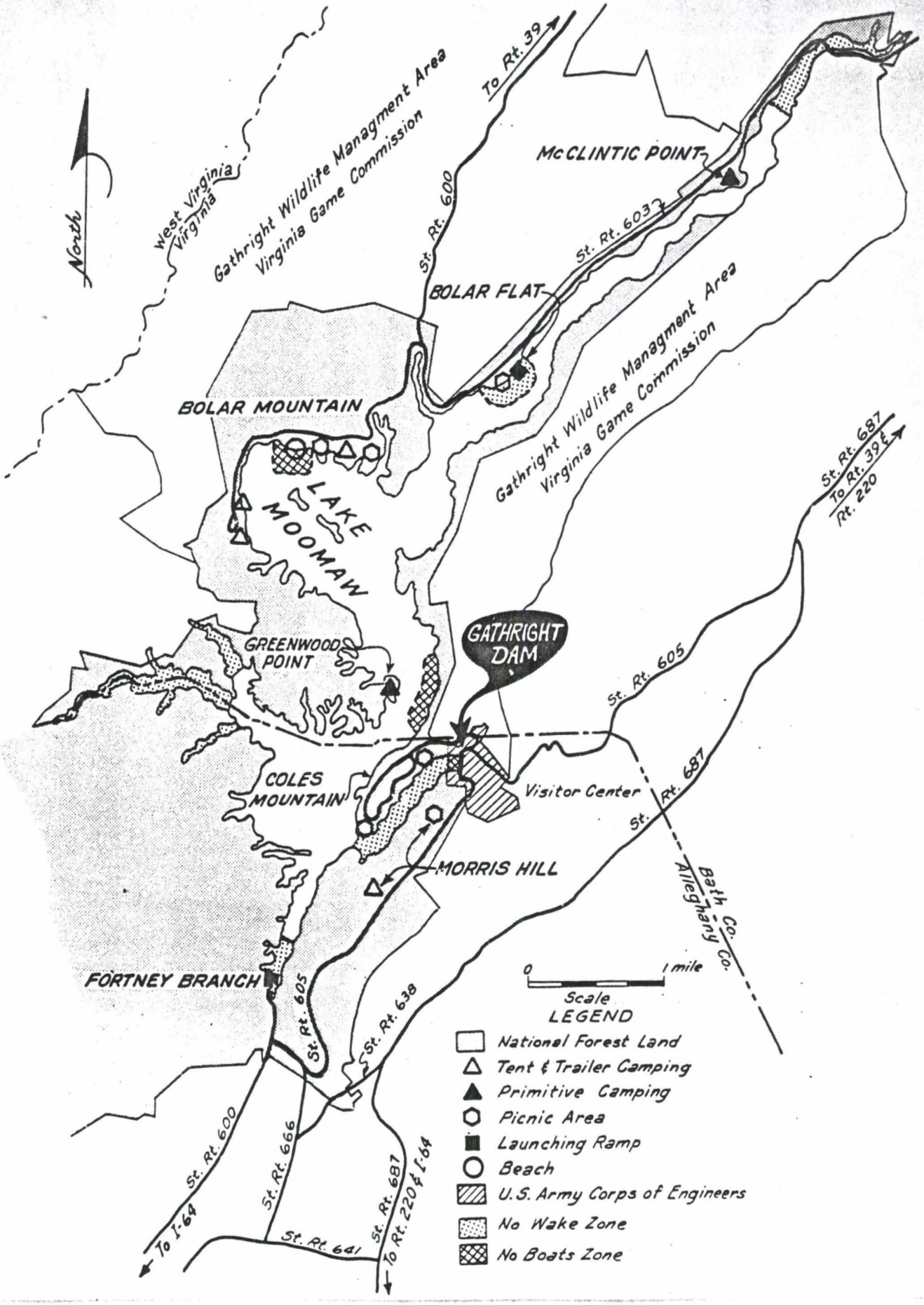
Benefit-Cost $3.57

APPENDIX D

GATHRIGHT DAM AND LAKE MOOMAW

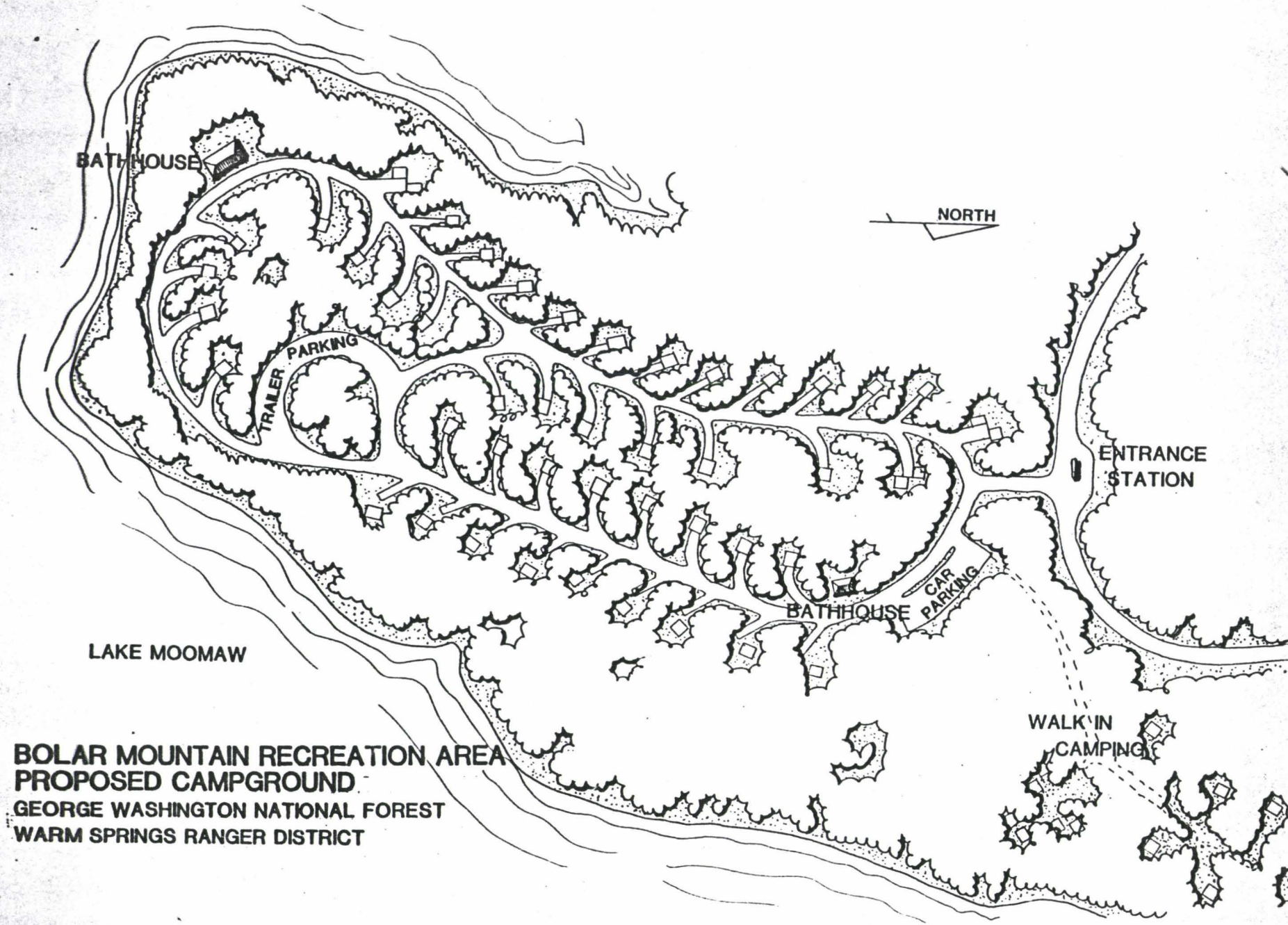
ADMINISTRATIVE BOUNDARIES

Gathright Dam and Lake Moomaw



APPENDIX E

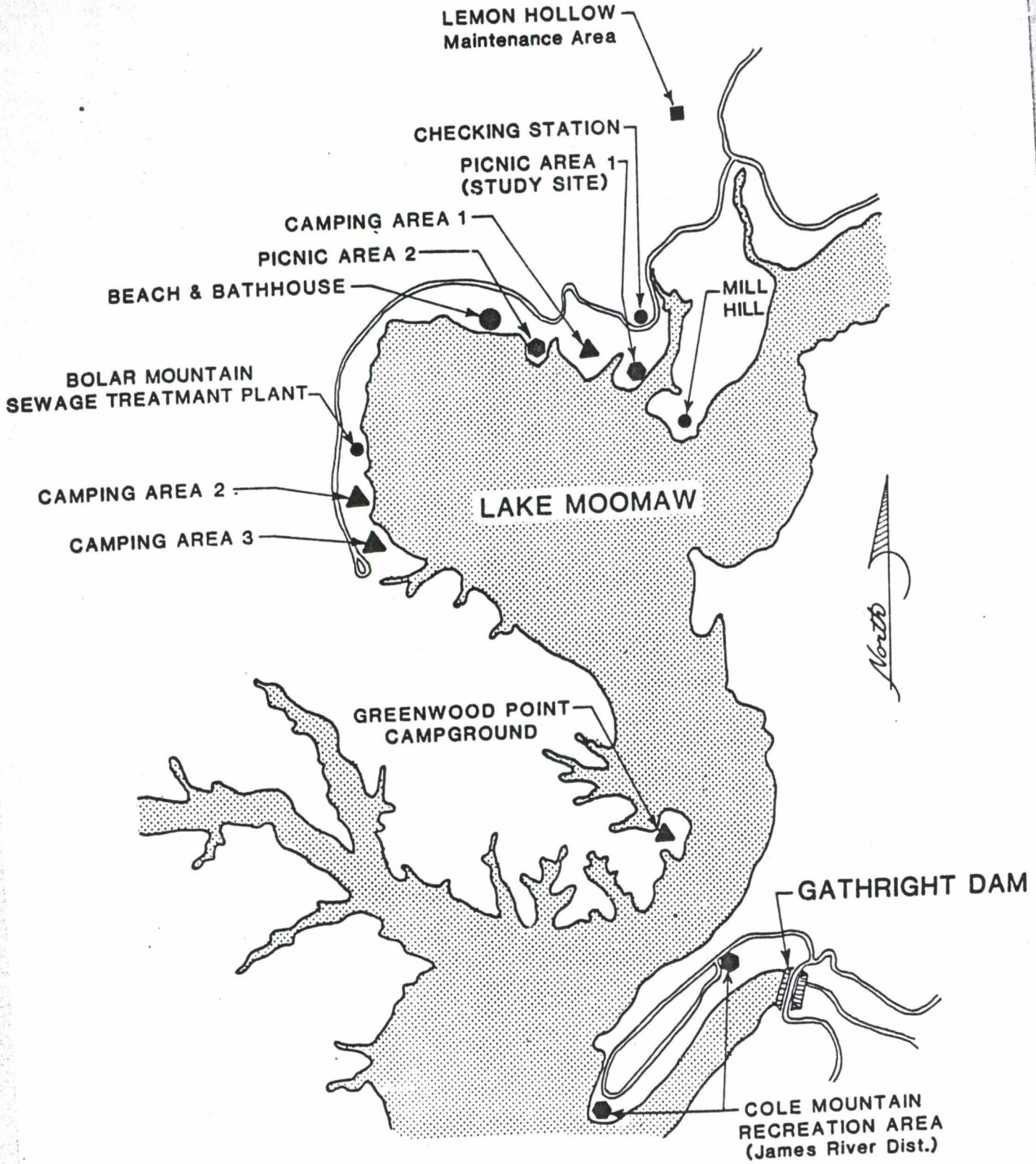
PROPOSED CONVERSION



BOLAR MOUNTAIN RECREATION AREA
PROPOSED CAMPGROUND
GEORGE WASHINGTON NATIONAL FOREST
WARM SPRINGS RANGER DISTRICT

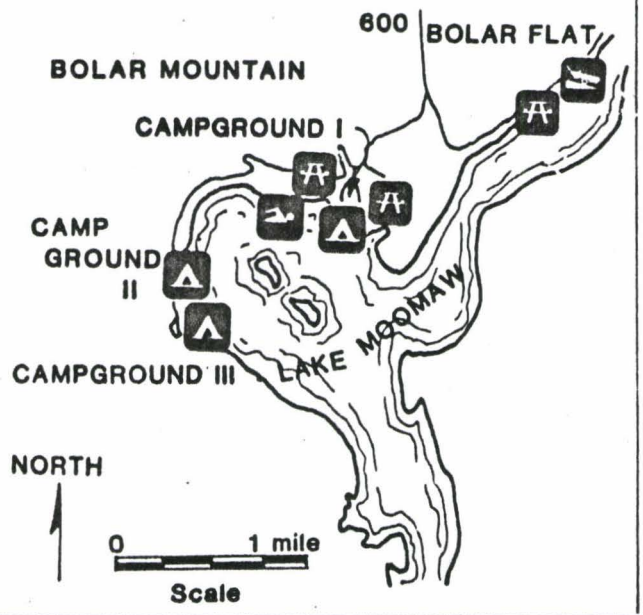
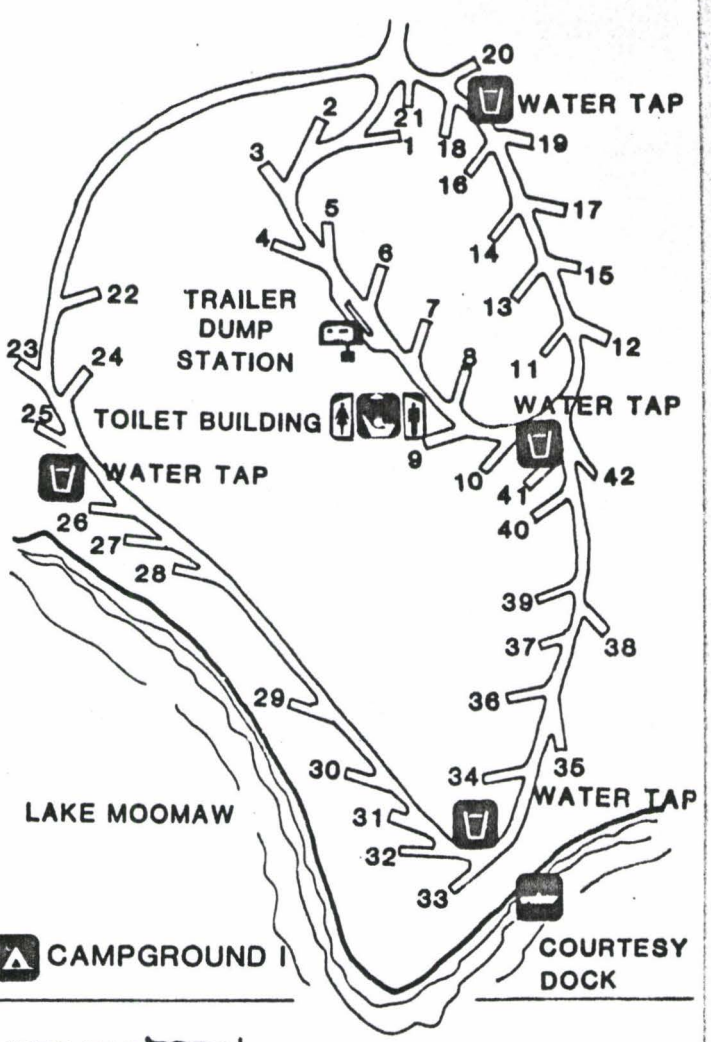
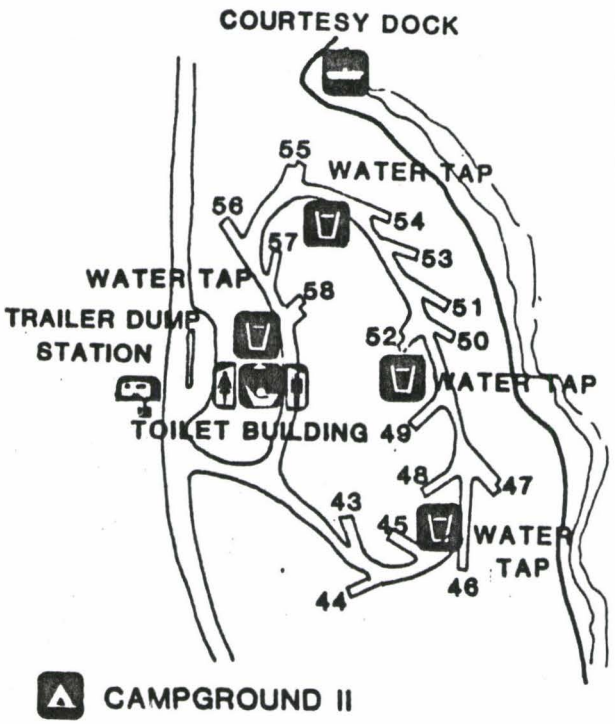
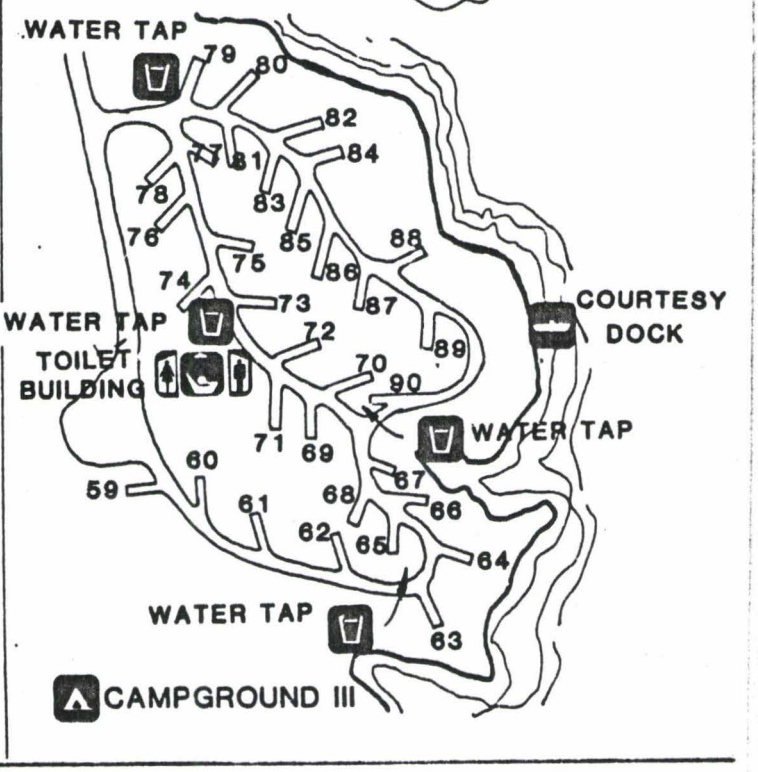
APPENDIX F

PICNIC AREA I - STUDY SITE


LEMON HOLLOW
Maintenance Area
CHECKING STATION
PICNIC AREA 1
(STUDY SITE)
CAMPING AREA 1
PICNIC AREA 2
BEACH & BATHHOUSE
MILL
HILL
BOLAR MOUNTAIN
SEWAGE TREATMANT PLANT
CAMPING AREA 2
CAMPING AREA 3
LAKE MOOMAW
North
GREENWOOD POINT
CAMPGROUND
GATHRIGHT DAM
COLE MOUNTAIN
RECREATION AREA
(James River Dist.)

APPENDIX G

BOLAR MOUNTAIN RECREATION AREA

BOLAR MOUNTAIN RECREATION AREAS

USDA Forest Service
George Washington National Forest
Warm Springs Ranger District